

CLAIMS LISTING

1. (Previously Presented) A method for creating a two-way communication from two unidirectional data channels, comprising:

communicatively coupling a set-top box with a hub of a media network, wherein the set-top box receives a streaming Moving Picture Experts Group (MPEG) video modulated on a coaxial cable rather than over an Internet protocol-based local area network;

filtering signals received by the media network from a multimedia headend to provide one or more available frequencies for communication between the set-top box and the hub;

filtering signals transmitted from the media network to the multimedia headend to prevent media network signals of the one or more available frequencies for communication from leaving the media network;

tuning the set-top box to the one or more available frequencies for communication to send ALOHA data to the hub on an out-of-band channel through a Quadrature Phase Shift Keying (QPSK) demodulator;

tuning the set-top box to a frequency other than the one or more available frequencies for communication between the set-top box and the hub to receive the signals from the multimedia headend on the out-of-band channel; and

tuning the set-top box to receive Quadrature Amplitude Modulation (QAM) modulated MPEG data and a multimedia content from the hub on an in-band channel;

wherein the filtering is performed by a notching filter;

wherein the hub is a personal computer comprising an API layer configured to mask the two unidirectional data channels such that the two unidirectional channels present an interface that appears as a bidirectional channel to applications and functions on the hub.

2. (Original) The method as recited in claim 1, further comprising tuning the set-top box to receive multimedia content from the hub on the in-band channel.

3. (Original) The method as recited in claim 1, further comprising communicatively coupling the set-top box with a programming content source in addition to communicatively coupling the set-top box with the hub.

4. (Original) The method as recited in claim 3, wherein the programming content source is a headend.

5. (Original) The method as recited in claim 3, wherein the communicative coupling further includes connecting coaxial cable between the set-top box and the hub.

6. (Original) The method as recited in claim 1, further comprising communicatively coupling media network nodes with the hub, wherein a

media network node receives streaming Moving Picture Experts Group video over an Internet protocol-based local area network.

7. (Original) The method as recited in claim 6, wherein the communicatively coupling media network nodes further includes communicatively coupling the media network nodes to the hub with Internet protocol-based local area network cable while coupling the set-top box to the hub with coaxial cable.

8. (Original) The method as recited in claim 7, further comprising simultaneously sending communications and content between the hub and a media network node using Internet Protocol-based local area network communications while sending communications and content between the hub and the set-top box using the out-of-band and the in-band channels.

9. (Withdrawn) The method as recited in claim 1, further comprising encrypting programming content to be sent from the hub to the set-top box.

10. (Withdrawn) The method as recited in claim 9, further comprising sending multiple program streams each representing a different scrambled versions of a same content, wherein a one unscrambled version of the content can be derived from the multiple program streams using a key.

11. (Withdrawn) The method as recited in claim 10, wherein for corresponding parts of each of the multiple program streams only one of the program streams has unscrambled content for that corresponding part.

12. (Withdrawn) The method as recited in claim 11, wherein for corresponding parts of each of the multiple program streams a part of the key associated with the corresponding parts of each of the multiple program streams indicates which one program stream has the unscrambled content for that corresponding part.

13. (Withdrawn) The method as recited in claim 12, wherein:
the multiple program streams consist of two program streams,
the key consists of a binary sequence, and
each digit of the binary sequence distinguishes between the two program streams.

14. (Previously Presented) A system, comprising:
a computing hub for receiving and storing multimedia content;
a set-top box coupled with the computing hub and coupled with a multimedia content source in order to receive multimedia content directly from the multimedia content source, wherein the set-top box receives streaming Moving Picture Experts Group video modulated on coaxial cable rather than over an Internet protocol-based local area network, wherein the set-top box further receives multimedia content from the

computing hub on the in-band channel, and wherein the set-top box sends data to the hub on an out-of-band channel and receives data from the hub on an in-band channel, a radio frequency filter blocks one or more frequencies of a signal from the multimedia content source to the set-top box and to the hub, and the set-top box sends data to the hub on an out-of-band channel that uses a frequency blocked by the radio frequency filter and receives data from the hub on an in-band channel that uses a frequency blocked by the radio frequency filter.

15. (Canceled)

16. (Canceled)

17. (Previously Presented) The system as recited in claim 14, wherein the multimedia content source is a headend.

18. (Previously Presented) The system as recited in claim 14, wherein the hub is coupled with the multimedia content source.

19. (Canceled)

20. (Canceled)

21. (Withdrawn) The system as recited in claim 14, wherein the radio frequency filter blocks data sent on the out-of-band channel from being sent over a communicative coupling to the multimedia content source and wherein the radio frequency filter blocks data sent on the in-band channel from being sent over the communicative coupling to the multimedia content source.

22. (Withdrawn) The system as recited in claim 21, wherein the radio frequency filter prevents communications back and forth between the hub and the set-top box on the blocked frequencies from leaving the system.

23. (Original) The system as recited in claim 14, wherein the set-top box is coupled with the computing hub, the computing hub is coupled with a multimedia content source, and the set-top box is not coupled directly with the multimedia content source.

24. (Original) The system as recited in claim 14, further comprising media network nodes to control interactions between the computing hub and controllable multimedia devices, wherein the computing hub simultaneously communicates with the media network nodes over an Internet Protocol-based local area network and communicates with the set-top box over the out-of-band channel and the in-band channel.

25. (Original) The system as recited in claim 24, wherein a physical connection between the computing hub and a media network node comprises an Ethernet cable and a physical connection between the computing hub and the set-top box comprises a coaxial cable.

26. (Original) The system as recited in claim 14, further comprising a hub-side integration engine in the computing hub to facilitate communication with the set-top box.

27. (Original) The system as recited in claim 26, wherein the hub-side integration engine further comprises an adapter to adapt upstream out-of-band data from the set-top box to the computing hub and to adapt downstream in-band data and multimedia content from the computing hub to the set-top box.

28. (Original) The system as recited in claim 27, wherein the adapter tunes data from the set-top box to the out-of-band frequency for transmission to the computing hub and tunes data and multimedia content from the computing hub to the in-band frequency for transmission to the set-top box.

29. (Withdrawn) The system as recited in claim 14, further comprising a content protector to encrypt multimedia content to be sent from the computing hub to the set-top box.

30. (Withdrawn) The system as recited in claim 29, further comprising a content protection decrypter to decode encrypted content using a low processing power function of the set-top box.

31. (Withdrawn) The system as recited in claim 30, wherein the computing hub sends multiple scrambled content streams and a key to the set-top box, wherein the set-top box uses the key to derive content from the multiple scrambled content streams.

32. (Withdrawn) The system as recited in claim 30, wherein the computing hub sends two scrambled content streams and a binary sequence key to the set-top box, wherein the set-top box uses the digits of the binary sequence key to distinguish which of the two scrambled program streams has current unscrambled content.

33. (Withdrawn) An electronic notching filter, comprising:
an incoming filter to produce a band of blocked frequencies in an incoming stream of multimedia signals, wherein the incoming filter blocks signals having one of the blocked frequencies from entering a media network from a multimedia headend; and
an outgoing filter to block signals that originate in the media network and prevent one of the blocked frequencies from leaving the media network, wherein the range of blocked frequencies is from at least about 5 megahertz to most about 42 megahertz.

34. (Withdrawn) The electronic notching filter as recited in claim 33, wherein one radio frequency filter is both the incoming filter and the outgoing filter.

35. (Previously Presented) An adapter, comprising:
a tuner to tune an out-of-band channel of a set-top box to a frequency selected for communication over a media network, the tuner configured to receive data sent from the set-top box using an ALOHA protocol on a first frequency for data directed within the media network and a second frequency for data directed out of the media network, wherein the media network has a hub that communicates over an Internet Protocol-based local area network with one or more network media nodes and communicates over the out-of-band channel and the in-band channel with the set-top box and one or more other set-top boxes;

a quadrature phase shift keying (QPSK) demodulator coupled with the tuner to demodulate upstream data signals from the tuner to the hub;

a quadrature amplitude modulation (QAM) modulator to receive and modulate data and multimedia content from the hub;

an upconverter coupled with the quadrature amplitude modulation (QAM) modulator to upconvert modulated data and multimedia content signals to the set-top box; and

a Moving Picture Experts Group (MPEG) decoder and a National Television System Committee (NTSC) video standard encoder to receive video content from the

hub and a radio frequency modulator coupled with the MPEG decoder/NTSC encoder to modulate video content signals for the set-top box.

36. (Original) The adapter as recited in claim 35, wherein the QAM modulator comprises an Annex B type.

37. (Original) The adapter as recited in claim 35, further comprising a QPSK modulator/demodulator coupled with the tuner to perform two-way data communication between the set-top box and the hub.

38. (Canceled)

39. (Canceled)

40. (Withdrawn) A content protection system, comprising:
a content protector to create multiple scrambled program streams from a single program stream according to a key, wherein the content protector places an unscrambled video frame of program content in any one of the scrambled program streams and places an associated scrambled video frame of program content in each of the remaining multiple scrambled program streams, and wherein the identity of the scrambled program stream receiving the unscrambled video frame is recorded as a corresponding part of the key; and

a content decrypter to receive the multiple scrambled program streams and the key and decode the multiple scrambled program streams into a single program stream according to the key.

41. (Canceled)

42. (Withdrawn) The content protection system as recited in claim 40, wherein after receiving the multiple scrambled program streams and the key:

the content decrypter reads the key to determine for a current part of the program stream which of the multiple scrambled program streams has the current unscrambled video frame of program content.

43. (Withdrawn) The content protection system as recited in claim 42, wherein sets of consecutive unscrambled video frames and corresponding sets of consecutive scrambled video frames are placed in the multiple scrambled program streams and the key is read at regular time intervals to determine which scrambled program stream has the next set of unscrambled video frames, wherein the key is a binary number provided to a set-top box from a hub.

44. (Withdrawn) The content protection system as recited in claim 43, wherein the key is read every one-half second.

45. (Withdrawn) The content protection system as recited in claim 40, further comprising a key generator in the content protector, wherein the key generator makes keys of a selected length.

46. (Withdrawn) The content protection system as recited in claim 45, wherein the content decrypter changes keys at regular time intervals.

47. (Withdrawn) The content protection system as recited in claim 46, wherein the content decrypter changes keys every ten seconds.

48. (Withdrawn) The content protection system as recited in claim 40, wherein the content protector creates multiple scrambled program streams from the single program stream by randomly shuffling MPEG slices of I frames from the single program stream.

49. (Withdrawn) The content protection system as recited in claim 40, wherein the content protector streams one continuous key to the content decrypter.

50. (Previously Presented) A method of using a media network having a hub to send multimedia content to media network nodes and to set-top boxes in the media network, wherein the set-top boxes receive streaming Moving Picture Experts Group video modulated on coaxial cable rather than over an Internet protocol-based local area network, comprising:

tuning the set-top boxes to selected frequencies of at least about 5 megahertz to at most about 42 megahertz, wherein the selected frequencies are reserved for communication in the media network by a bidirectional electronic radio frequency notching filter configured to block signals of the selected frequencies incoming from a multimedia head and to block outgoing signals of the selected frequencies from leaving the media network;

requesting a list of programs from the hub on an out-of-band channel of a set-top box using a one of the selected frequencies, wherein the out-of-band channel comprises frequencies from at least about 5 megahertz to at most about 42 megahertz and is used for upstream communication from the set-top box to the hub by sending ALOHA data via a Quadrature Phase Shift Keying (QPSK) demodulator;

receiving a list of programs from the hub on an in-band channel of the set-top box using one of the selected frequencies, wherein the in-band channel is used for downstream communication from the hub to the set-top box by sending data via an Annex B type Quadrature Amplitude Modulation (QAM) modulator and an upconverter;

requesting program content on the out-of-band channel of the set-top box using one of the selected frequencies;

receiving a confirmation of the requesting program content on the in-band channel of the set-top box using one of the selected frequencies; and

receiving the program content on the in-band channel of the set-top box using one of the selected frequencies, wherein the program content is encrypted by creating two encrypted program streams from the program content such that for each I frame in the MPEG data one of the two program streams contains an un-modified I frame and

the other of the two program streams contains random shuffling of MPEG slices of the I frame and the program content is decrypted by a binary key that for a given I frame identifies the one of the two encrypted program streams as containing the un-modified I frame when a digit of the binary key is 0 and identifies the other of the two program streams as containing the un-modified I frame when the digit of the binary key is 1;

wherein the hub is a personal computer comprising an API layer configured to mask the two unidirectional data channels such that the two unidirectional channels present an interface that appears as a bidirectional channel to applications and functions on the hub.

51. (Previously Presented) A method of using a media network having a hub to send multimedia content to media network nodes and to set-top boxes in the media network, comprising:

tuning the set-top boxes to selected frequencies reserved for communication in the media network;

requesting a trick mode on an out-of-band channel of a set-top box using one of the selected frequencies, wherein the out-of-band channel comprises frequencies from at least about 5 megahertz to at most about 42 megahertz and is used for upstream communication from the set-top box to the hub by sending ALOHA data;

receiving a confirmation of the requesting a trick mode on the in-band channel of the set-top box using one of the selected frequencies, wherein the in-band channel is used for downstream communication from the hub to the set-top box by sending data via a Quadrature Amplitude Modulation (QAM) modulator and an upconverter and the

hub is a computer comprising an API layer configured to mask the out-of-band channel and the in-band channel such that the out-of-band channel and the in-band channel present an interface that appears as a bidirectional channel to applications and functions on the hub; and

receiving the program content in the trick mode on the in-band channel of the set-top box using one of the selected frequencies.

52. (Previously Presented) One or more computer readable media containing instructions that are executable by a computer to perform actions comprising:

filtering signals received by the media network to provide one or more clear frequencies for communicating between a set-top box and a hub of a media network;

tuning the set-top box to send data to the hub on an out-of-band channel, wherein the out-of-band channel comprises frequencies from at least about 5 megahertz to at most about 42 megahertz and is used for upstream communication from the set-top box to the hub by sending ALOHA data; and

tuning the set-top box to receive data from the hub on an in-band channel, wherein the in-band channel is used for downstream communication from the hub to the set-top box by sending data via a Quadrature Amplitude Modulation (QAM) modulator and an upconverter , wherein the hub is a computer comprising an API layer configured to mask the out-of-band channel and the in-band channel such that the out-of-band channel and the in-band channel present an interface that appears as a bidirectional channel to applications and functions on the hub.

53. (Original) The one or more computer readable media as recited in claim 52, further comprising tuning the set-top box to receive multimedia content from the hub on the in-band channel.

54. (Original) The one or more computer readable media as recited in claim 52, further comprising tuning the set-top box to receive multimedia content from the hub on the in-band channel.

55. (Original) The one or more computer readable media as recited in claim 52, further comprising simultaneously sending communications and content between the hub and a media network node of the media network using Internet Protocol-based local area network communications while sending communications and content between the hub and a set-top box using the out-of-band and the in-band channels.

56. (Withdrawn) The one or more computer readable media as recited in claim 52, further comprising encrypting programming content to be sent from the hub to a conventional set-top box.

57. (Withdrawn) The one or more computer readable media as recited in claim 56, further comprising sending multiple program streams each representing a different scrambled version of a content, wherein the entire content can be derived from the multiple program streams using a key.

58. (Withdrawn) The electronic notching filter as recited in claim 34, wherein a programming content of the band of blocked frequencies is retransmitted to the media network as a low-bandwidth digital stream.